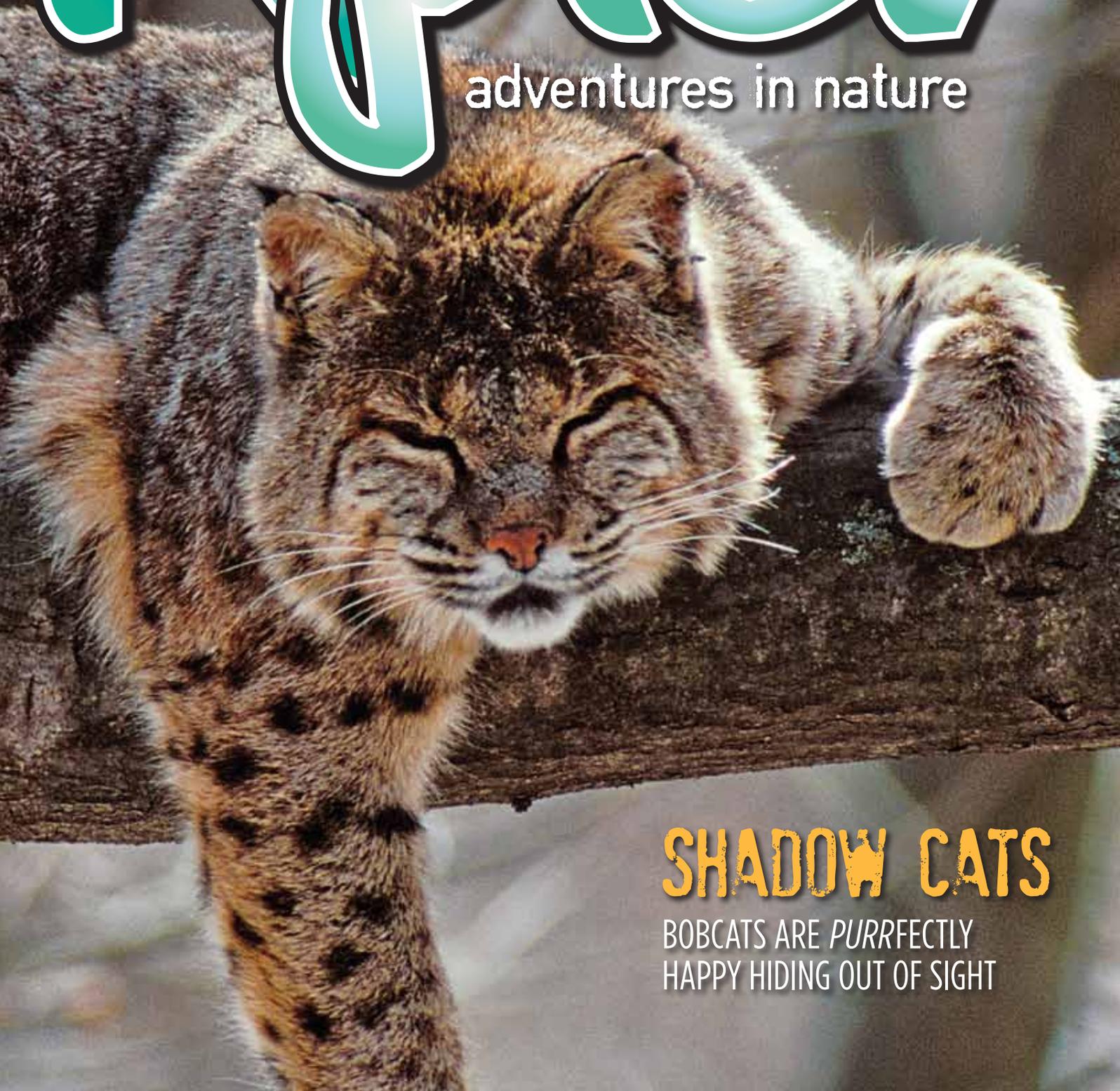




August/September 2013

# Xplor

adventures in nature



## SHADOW CATS

BOBCATS ARE *PURRFECTLY*  
HAPPY HIDING OUT OF SIGHT

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## ON THE COVER



**BOBCAT**  
by Jim Rathert

**6 Jaws of Life**  
Bird beaks come in all shapes and sizes.

**10 Shadow Cats**  
Although they're common in Missouri, bobcats are all but invisible to most people.

## DEPARTMENTS

- 1 What Is It?
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## ON THE WEB

Visit [xplormo.org](http://xplormo.org) for cool videos, sounds, photos, fun facts, and more!

# WHAT IS IT?

**DON'T KNOW?**  
Jump to Page 16 to find out.



- ❶ I get bugged when you call me a bug.
- ❷ I live on land but breathe water.

- ❸ I don't go number one, but I eat number two.
- ❹ Holy guacamole, I'm roly-poly.

# YOU discover

Northern cardinal

American goldfinch



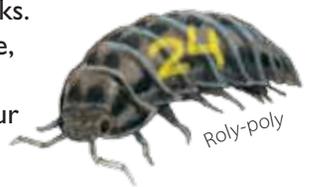
## BUILD A BLIND

What do animals do when people aren't around? Here's how to find out. First, get your paws on a large cardboard box. Appliance stores usually have big boxes. Cut out a small viewing window, and paint the box green, brown, and black for camouflage. Place the box near a bird feeder, under a tree where squirrels gather, or in the woods along a deer trail. Climb inside with some snacks and a book ... and wait. Soon, critters will forget you're in there, granting you a great view of their daily business.

With summer winding down and autumn gearing up, there's plenty to discover outside in August and September. Here are a few ideas to get you started.

## RACE ROLY-POLIES

Grab some friends and the smallest lasso you can find. It's time for a roly-poly roundup! Look under rocks, rake up leaves, and search the base of your house for the brownish-gray crustaceans (roly-polies are related to lobsters and crabs). Once you've gathered a few, make a simple maze out of rocks or sticks. Turn the roly-polies loose at the entrance, and see which one boogies through the maze first. When you're done, return your racers to the place you found them.



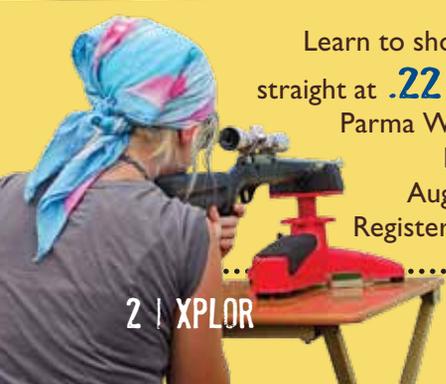
roly-poly

## Sprout your SOCKS

Has your mom ever complained that your socks are dirty enough to grow flowers? Here's a fun way to prove her right. Slip an old pair of socks — the fuzzier, the better — on over your shoes and go for a stroll in the weediest place you can find. Soon, your socks will be smothered with seeds. Stuff the socks with potting soil, stick them in a baking pan, and pour some water in the pan so the socks soak it up. Use a spray bottle to keep the seeds moist, and in a week or so, your socks will sprout!



# Don't miss the chance to Discover Nature at



Learn to shoot safely and straight at **.22 PLINKING.** Parma Woods Shooting Range, Parkville August 15, 6–9 p.m. Register at 816-891-9941.

See moths flutter by during **BLACK LIGHT NIGHTS.** Rockwoods Reservation, Wildwood; Ages 6 and older August 30, 7:30–9 p.m. Register at 636-458-2236.



Make your own lures at the **FLY TYING EXTRAVAGANZA.**

Runge Conservation Nature Center, Jefferson City; Ages 6–12 August 20, 6:30–8 p.m. Register at 573-526-5544.



Underwing moth (left) and sphinx moth (right) photos: Donna Brunet

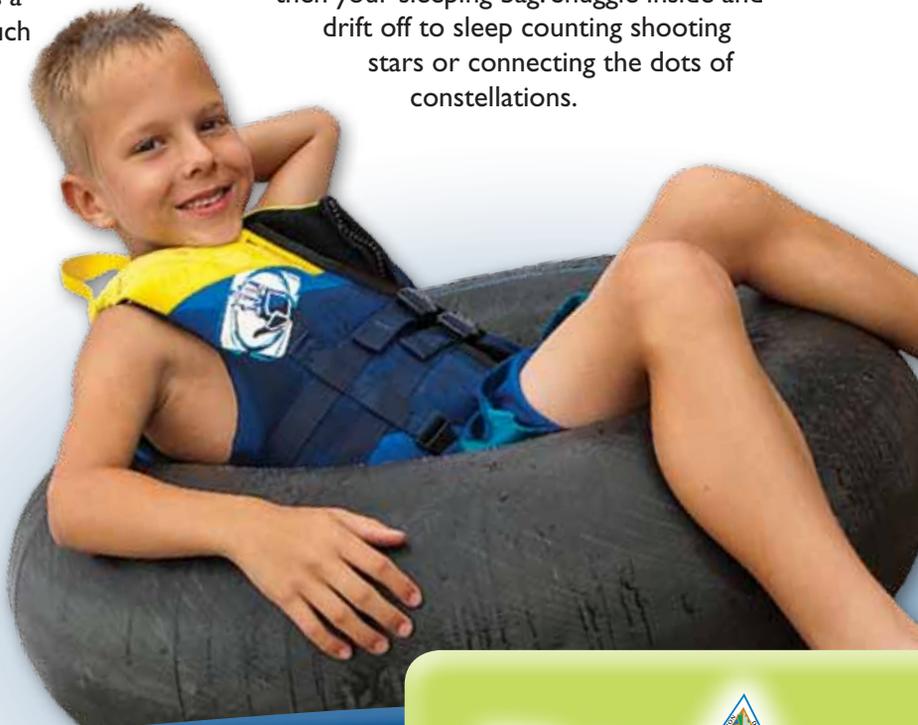


## Paint a NATURE SCENE

Famous painters — such as Monet, Van Gogh, and Winslow Homer — found inspiration for their art in nature. You can, too. Grab paint, brushes, paper or canvas, and head outside to set up your easel. You'll find plenty to paint, from sweeping landscapes, such as a forest starting to show fall color, to fine details, such as a fuzzy caterpillar wiggling along a leaf. The French call this style of painting *en plein air* (in the open air). You'll call it just plain fun.

## GET TUBULAR

When August's heat has you beat, it's time to get tubular. Salvage a tractor inner tube at an equipment dealership or buy a float tube from a sporting goods store. Then head to your favorite swimming hole. There's nothing wrong with floating lazily along, but if you crave action, grab a buddy and play "King of the Tube." Or, bring a pole and fish from your floating donut. If you hook a lunker, it might take you for a cruise.



## Sleep under the STARS

No tent? No problem. With some know-how, you can still sleep outside. Pick a clear night with a good breeze to blow the mosquitoes away. Find a soft, flat spot with a good view of the sky. Lay down a tarp or piece of plastic, then a foam pad or air mattress, then your sleeping bag. Snuggle inside and drift off to sleep counting shooting stars or connecting the dots of constellations.

## these fun events.



End summer with some hummers at the **HUMMINGBIRD CELEBRATION.**

Cape Girardeau Conservation Nature Center; August 17, 8 a.m.–2:30 p.m. For more info, call 573-290-5218.

Shoot bows, catch fish, and more at the **19TH ANNUAL GREAT OUTDOORS DAY EVENT.**

Andy Dalton Shooting Range, Ash Grove; September 28, 8:30 a.m.–3 p.m. For info, call 417-742-4361.



Looking for more ways to have fun outside? Find out about Discover Nature programs in your area at [xplormo.org/node/2616](http://xplormo.org/node/2616).

Above: Ruby-throated hummingbird

# PREDATOR

# VS

# PREY

The struggle to survive isn't always a fair fight. Here's what separates nature's winners from its losers.  
Illustration by David Besenger

### Solar Panel Skin

Black skin on a roadrunner's back soaks up sunshine so the bird is warm and ready to run.

### Tight Turn Tail

Collared lizards steer with their rears, swinging their long tails out for balance when they tear around tight turns.

### Leggy Lizards

A collared lizard's back legs are three times longer than its front legs. Running upright helps the lizard take longer strides and reach speeds of 16 miles per hour.

### Feathered Flash

Roadrunners zip along at 18 miles per hour, faster than Olympic athletes run the mile. No other American bird runs faster.

### Beak Bash

Roadrunners break the bones of their breakfasts by pounding prey to a pulp against rocks.

Greater roadrunner

Collared lizard

**AND, THE WINNER IS...**

Roadrunners are so quick, they've been seen plucking hummingbirds out of the air. With that kind of speed, this lizard's lunchmeat unless it finds a rocky retreat to dive into.

# How To

## Read a River

**F**loating an Ozark stream is tons of fun, but tipping your canoe can be a drag. Learn to read the water, and you'll get dunked only when you want to go swimming. Here's what to look for.

### UPSTREAM V

When rocks and stumps are submerged just below the surface, water flowing over and around them forms a V with the tip pointing upstream. If you see an upstream V, paddle around it!

### DOWNSTREAM V

When water flows between two obstacles, it forms a V with the tip pointing downstream. Aim your canoe toward the point of a downstream V, and you'll find a clear path and smooth sailing.

### STRAINER

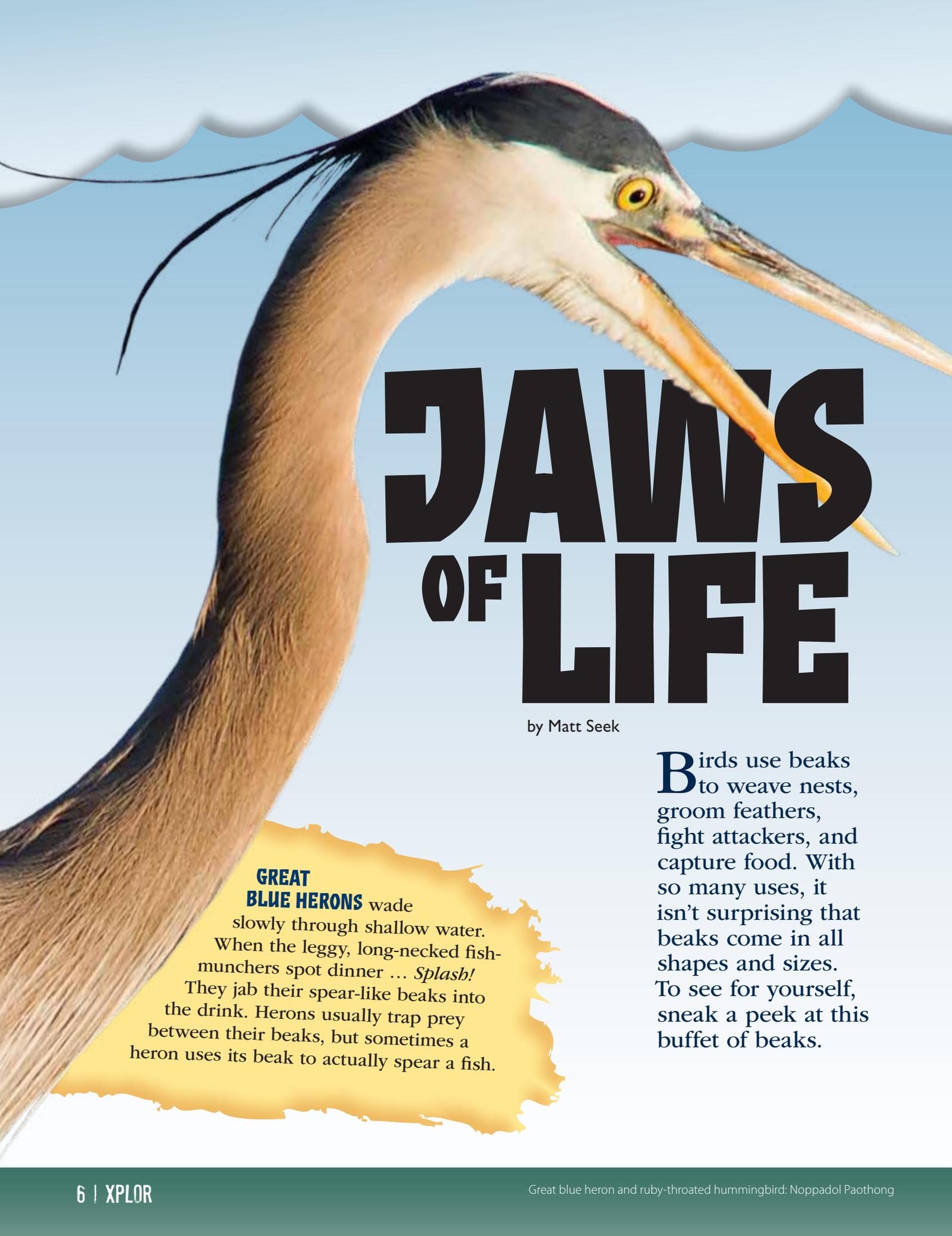
The current cuts into the outer bends of rivers, washing away soil and causing trees to slide off the bank into the water. Avoid these trees! Their branches act like leafy spaghetti strainers that can swallow your canoe.

### HORIZON LINE

A horizontal line on the water's surface indicates a steep, sudden drop in the river. The drop could be a fun-to-run 3-foot ledge or a dangerous, canoe-crumpling waterfall. The only safe way to find out is to beach your canoe and hike downstream for a better look.

### WASHBOARD RIPPLES

These small, numerous waves indicate shallow water. They won't cause you to flip, but you'll often run aground and have to get out to pull your canoe downstream.

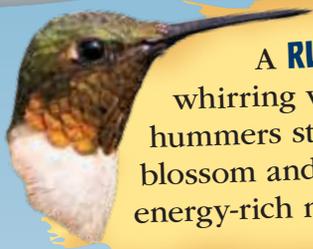


# JAWS OF LIFE

by Matt Seek

**GREAT BLUE HERONS** wade slowly through shallow water. When the leggy, long-necked fish-munchers spot dinner ... *Splash!* They jab their spear-like beaks into the drink. Herons usually trap prey between their beaks, but sometimes a heron uses its beak to actually spear a fish.

**B**irds use beaks to weave nests, groom feathers, fight attackers, and capture food. With so many uses, it isn't surprising that beaks come in all shapes and sizes. To see for yourself, sneak a peek at this buffet of beaks.



A **RUBY-THROATED HUMMINGBIRD'S** whirring wings run on flower power. To refuel, hummers stick their skinny snoots deep in a blossom and use their long tongues to lick up the energy-rich nectar inside.

### **PILEATED WOODPECKERS**

bang their sharp, burly beaks against trees. The holes they hammer out contain carpenter ants and other insects that hungry woodpeckers capture with their extra long tongues.



**COMMON YELLOWTHROATS** are itty-bitty birds that hop quickly through tangled vegetation. Along the way, they use their tweezer-like beaks to pluck insects off leaves and snap up spiders from hidey-holes in bark.



Comb-like ridges called **lamellae** (*lah-mel-lay*) line the edges of a **NORTHERN SHOVELER'S** beak. Lamellae work like a spaghetti strainer. When a shoveler scoops a mouthful of marsh water, the water flows out, but seeds and insects get trapped for the duck to munch.

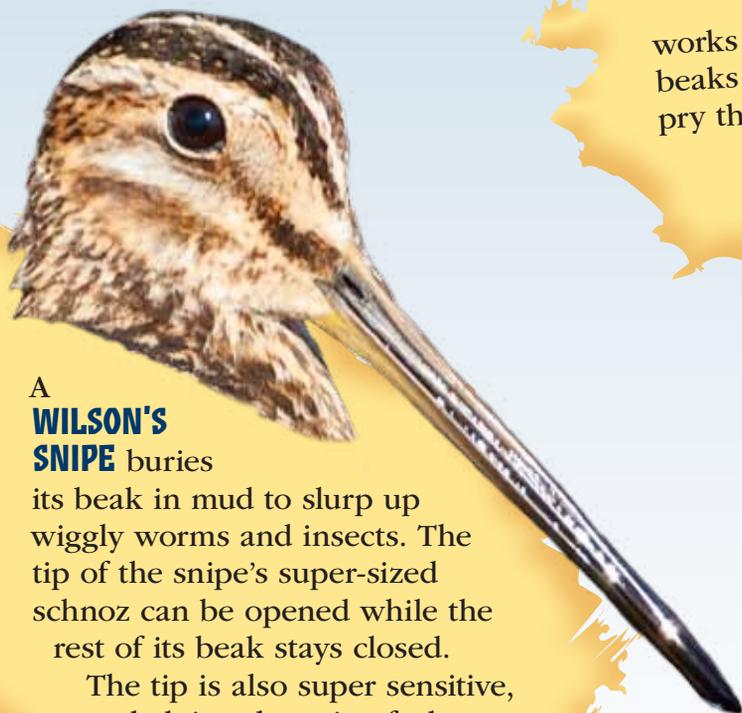


A **NORTHERN CARDINAL'S** stout snout is made for cracking seeds. Grooves in the cardinal's upper beak hold seeds steady while its sharp lower beak swings shut, crushing each seed's tough shell.

Birds don't have teeth to chew food, so they swallow it whole. (Wouldn't your mom be *horrified*?) But big critters are tough for birds to choke down. **RED-TAILED HAWKS** use their sharp, hooked beaks to shred squirrels and rabbits into bite-sized nuggets.



The tips of a **RED CROSSBILL'S** upper and lower beaks don't line up — they're crossed. But this bird doesn't need braces. Its beak works just fine. Crossbills wedge their freaky beaks into pine cones, using the crossed tips to pry the cones open and pluck out seeds.



A **WILSON'S SNIPE** buries its beak in mud to slurp up wiggly worms and insects. The tip of the snipe's super-sized schnoz can be opened while the rest of its beak stays closed. The tip is also super sensitive, helping the snipe feel hidden prey.



If a **COMMON MERGANSER** manages to get its beak around a minnow, the lucky duck doesn't want dinner to swim away. To keep that from happening, a merganser's beak has pointy, toothlike lamellae that are perfect for holding slippery fishies.



When an **AMERICAN WHITE PELICAN** wishes for fishes, it plunges its beak underwater like a dip net. With a single scoop, the big-beaked bird gathers three gallons of water — and several unlucky fish. It tips its beak to drain the water and swallows any fish left behind.

# Shadow



# Cats

by Matt Seek



Although they're common throughout Missouri, bobcats dwell in the shadows, all but invisible to most people.

## *A Cat Named Bob*

Bobcats are named for their stubby, “bobbed” tails, but it’s their furry sideburns that most people recognize. Full-grown bobcats don’t weigh much more than a chubby house cat. But a bobcat’s long legs make it stand nearly twice as tall as your tabby. Like any self-respecting cat, bobcats take lots of sun naps, give themselves tongue baths, and sharpen their claws on whatever’s handy. They usually stay tight-lipped but may hiss when scared, growl when mad, purr when happy, and meow to say, “what’s up.”

Bobcats aren’t picky about where they live. If there are rabbits to eat, places to hide, and dens to raise kittens, chances are a bobcat will be there — they even turn up in towns and suburbs. You may have a bobcat for a neighbor. But don’t worry. Unless you’re a rabbit, you have nothing to fear.



### *Purrfect Assassins*

Rabbits top the menu in Missouri, but bobcats will eat whatever they can catch. Thanks to an arsenal of claws, jaws, and eyeballs, they catch quite a lot.

Not much escapes a bobcat's keen eyes. Their peepers are about as big as yours, but their pupils can open three times wider. This lets in more light, helping bobcats pinpoint prey when it's dark.

Bobcats usually keep their claws tucked into their paws. This keeps the claws razor sharp. When a bobcat's ready for business, it unsheathes its terrible toenails, hooks them into prey, and hangs on until it can put its teeth into play.

Super strong jaws increase the number of critters bobcats can chomp. The feisty felines can take down animals 10 times their size, including small white-tailed deer. But a bobcat's bite is especially bad news for bunnies. The

cat's canines — long, pointy teeth at the edges of its smile — fit perfectly between the bones of a rabbit's spine. When a bobcat bites down, its teeth pierce the cottontail's spinal cord, delivering a quick death.

### *Super Sneaker*

At dawn and dusk, bobcats go on the prowl. If you tried to follow a hunting bobcat, you'd zigzag all over the place. Like house cats, bobcats are curious and investigate whatever catches their eye.

Once a bobcat spots prey, its focus becomes laser sharp. It crouches down and slinks closer, taking care to avoid snapping twigs or rustling leaves. Sneaking bobcats place their back paws in the footprints of their front paws, so no extra sound is made. When a bobcat has crept within striking range, it pounces, becoming a tawny brown blur of fur, claws, and fangs. Victims rarely hear a thing.

## *Cats in the Cradle*

In winter, bobcats look for mates. Lovestruck females make loud yowls that can be heard a mile away. Although their boyfriends leave after just a few days, girl cats aren't lonely for long. By spring, females are busy preparing dens in hollow logs, rocky caves, or tangled thickets. There, they give birth to a litter of two to four kittens.

Newborn kittens are blind and helpless. They mew when they're hungry and purr when they eat. After 10 days of drinking mom's milk, their eyes squint open, and they begin exploring their den.

Mama bobcats take good care of their kitties. Mom changes dens every week or so to keep predators from finding her family. When her kittens are too young to walk, she carries them gently by the scruff of their necks. At each new home, mom makes a leafy nest to keep her babies comfy.

Kittens start playing outside when they're about a month old. They wrestle and stalk each other, wiggling their bottoms before they pounce. The toddlers tire easily and sometimes fall asleep in the middle of their

games. When mom growls an alarm, the kittens scatter and hide until danger has passed.

## *Don't Play With Your Food*

When kittens are about 2 months old, mom begins cutting back on milk and starts bringing prey to the den. At first, kittens just bat at the prey, unsure whether to eat it or play with it. But their growling tummies get the best of them, and soon they've switched from drinking milk to eating meat.

Hunting lessons begin when the kittens are about 4 months old. Mom brings wounded prey back to the den, and her kittens practice pouncing on it. Once they pass that test, the kittens begin tagging along when mom goes hunting. At first, they simply watch mom and study her hunting tactics. When the kittens try to catch prey themselves, their first attempts usually fail. But by the time they're 7 months old, young bobcats are well on their way to becoming rabbit-chomping shadow cats.

© cultura/Corbis



© W. Perry Conway/Corbis



# WILD JOBS

MIZZOU STUDENT  
**RHETT HARTMAN**  
WRANGLES KATYDIDS TO  
GET INSIDE THE MINDS OF  
THESE SINGING INSECTS

## Q: WHY DO KATYDIDS SING?

A: Katydid are green, they're shaped like leaves, and they're active at night — they're basically invisible. That's great for avoiding predators, but it makes it tough to find mates. Males sing so females can find them.

## Q: WHAT DO THEIR SONGS SOUND LIKE?

A: Some katydids sound like a gushing faucet. Others sound like a sprinkler: *psst ... psst ... psst*. Males make sound by rubbing their wings together.

## Q: WHAT DO YOU HOPE TO LEARN ABOUT KATYDIDS?

A: Lots of males sing at the same time. I want to know what signals go into a female's brain to make her choose one male's song instead of another's.

## Q: HOW CAN YOU TELL WHAT GOES INTO A FEMALE'S BRAIN?

A: Katydid hear the same way we do. Sound goes into their ears. It's converted to electricity. The electricity travels through nerves to their brain. I put wires on katydids so I can graph the electrical signals as they move through their nerves.

## Q: WHAT DOES THE GRAPH LOOK LIKE?

A: We make lots of graphs, but one looks like squiggly lines. You can learn a lot from those squiggles, though.

## Q: LIKE WHAT?

A: I learned that with one kind of katydid, a female's nerves filter out some signals before they ever reach her brain. These signals come from males who sing a fraction of a second after other males. But if the signal never reaches her brain, then she never actually "hears" the late singers. So, the late singers may not get many girlfriends.

# STRANGE, but TRUE!

YOUR GUIDE TO ALL THE  
**UNUSUAL, UNIQUE,**  
AND **UNBELIEVABLE**  
STUFF THAT GOES ON IN NATURE



## FOX SQUIRRELS

have sweat glands between their toes. When a squirrel gets excited or hot, its paw prints become wet from sweat.

## RUBY-THROATED HUMMINGBIRDS

normally beat their wings about 50 times a second. That's fast, but it's a bummer compared to a lovestruck hummer. When trying to impress a mate, male hummers flap their wings 200 times a second.



## Sproing! NINE-BANDED ARMADILLOS

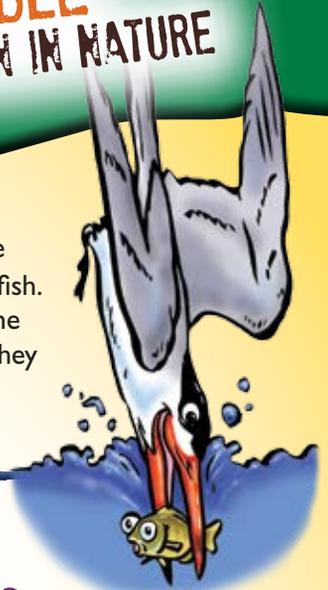
spring straight up when startled. This gives the armored animals a jump on hungry coyotes and other predators, but it doesn't work so well for dodging cars.

## Female PLAIN POCKETBOOK MUSSELS

wave lures that look like small, swimming fish. When a big fish strikes at the lure, the mama mussel squirts out a cloud of tiny babies. The baby mussels attach themselves to the fish for a free ride.



**CASPIAN TERNS** plunge beak-first into water to catch fish. Teenage terns have a tough time learning this technique. Until they master it, they mooch food from mom and pop.



## Crunchy! PURPLE MARTINS

gobble down gravel and eggshells. The gritty bits stay in the birds' guts to help grind up the hard skeletons of insects that martins eat.



## MONARCH CATERPILLARS

munch milkweed, a poisonous plant. But the caterpillars aren't harmed. In fact, the more milkweed caterpillars eat, the more toxic they become. By the time they turn into butterflies, they're so toxic, birds that eat them throw up.



**BADGERS** use long, sharp claws to dig up their dinner of voles, mice, and ground squirrels. At full speed, the furry dirt-drills can disappear underground in less than a minute. They can even out-dig a person with a shovel!



# XPLOR MOR

## nest mess

Different kinds of birds build different kinds of nests. But these bird-brains are mixed up about which nests they build. Can you match the bird to its home tweet home?

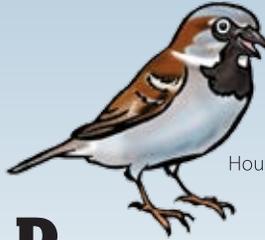
- A \_\_\_\_\_
- B \_\_\_\_\_
- C \_\_\_\_\_
- D \_\_\_\_\_
- E \_\_\_\_\_
- F \_\_\_\_\_
- G \_\_\_\_\_
- H \_\_\_\_\_



**A**  
Canada goose



**B**  
American robin



**C**  
House sparrow



**D**  
Barn swallow



**E**  
Red-tailed hawk



**F**  
Ruby-throated hummingbird



**G**  
Red-eyed vireo



**H**  
Pileated woodpecker



1



2



3



## WHAT IS IT?

— FROM PAGE 1 —

Despite their name, pillbugs are more closely related to lobsters, shrimp, and crayfish than bugs. Like their water-loving relatives, pillbugs breathe with gills. Gills work only when wet, so pillbugs stay in dark, moist places. Pillbugs don't pee, but they do eat their own poop. The poop contains copper, which pillbugs need to survive. When disturbed, pillbugs roll into a ball. That's why many people call them roly-polies.



## bird nest bingo

Who's been nesting in your neighborhood? Fall is a great time to find out. When leaves drop, nests are revealed. Before snow and wind turn the nests to mush, grab a buddy and play "Bird Nest Bingo."

1. Cut out or photocopy the bingo cards and grab a couple of pencils.
2. Head outside to look for nests. Birds build nests in all sorts of places, so look high and low in trees, along trunks and out in the tips of branches. Some birds nest on the ground, so scour fields and along the edges of lakes. Don't forget to peer inside birdhouses and search human houses — birds build nests there, too!
3. When you find a nest, see if it looks like any of the pictures on your bingo card. If it does, draw an X through the square that contains the picture. The middle square is a free space, so go ahead and draw an X through it.
4. The first person to get three X's in a row (across, down, or diagonally) wins.



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FREE TO MISSOURI HOUSEHOLDS

## CRITTER CORNER

### Wheel Bug



The wheels on the bug go round and round. Wheel bugs, which are named for their round backs, stab insects using their long, pointy beaks. Wheel bug spit turns a victim's guts to mush, which the wheel bug slurps up like an insect-flavored smoothie. It's best to observe these spike-faced assassins at arm's length. Their bite hurts worse than a hornet's sting.